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CLAIMS

What is claimed is:

5 1. A deposit monitoring apparatus located above ground level comprising:

 an acoustic device adapted to operate in a resonance mode in a frequency range of 10 kHz to 250 kHz, the device including a monitoring surface directly exposed to fluids
10 prone to causing deposition of material, wherein the deposition of the material on the monitoring surface is monitored by measuring a change in resonance frequency of the acoustic device; and

 a power supply adapted to supply said monitor with
15 electrical energy.

 2. The apparatus of claim 1, wherein the acoustic device operates in a longitudinal mode.

20 3. The apparatus of claim 2, wherein the acoustic device further comprises a transducer, and a focussing element coupled to the transducer.

25 4. The apparatus of claim 3, wherein the focussing element is an acoustic horn.

 5. The apparatus of claim 1, wherein the resonance frequency of the acoustic device is in the range of 10 kHz to
30 150 kHz.

 6. The apparatus of claim 5 wherein the resonance frequency of the acoustic device is in the range of 50 kHz to
35 100 kHz.

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7. The apparatus of claim 1 wherein the fluids are primarily fluids produced by a hydrocarbon wellbore.

8. The apparatus of claim 1, wherein the monitoring
5 surface is located on or near one of the following devices
switches, valves, sleeves, mandrels, risers, subsea pipelines,
surface separators and sensors located on surface facilities.

9. The apparatus of claim 1 further comprising a deposit
10 removal system adapted to at least partially remove the
deposition from the monitoring surface, the deposit removal
system being in a control loop with said deposit monitor.

10. The apparatus of claim 9, wherein the deposit removal
15 system includes a deposition inhibiting or removing chemical
agent.

11. The apparatus of claim 9, wherein the deposit removal
system uses the acoustic device to exert a physical force onto
20 the deposited material.

12. The apparatus of claim 9, wherein the deposition
removal system is near a sensor having a surface exposed to the
fluids and the deposition removal system is adapted to remove
25 deposits from said exposed surface.

13. The apparatus of claim 12, wherein the sensor is
selected from a group comprising optical sensors, electro-
chemical sensors, or acoustic sensors.

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14. The apparatus of claim 11, wherein the exposed sensor
surface is selected from a group comprising optical windows,
membranes, or sensitive areas of acoustic sensors.

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15. The sensor of claim 1, wherein the sensor includes an additional sensing system to analyze material deposited on the monitoring surface.

5 16. A deposit monitoring apparatus located above ground level comprising:

 a deposit monitor adapted to measure deposition of material on a monitoring surface that is directly exposed to fluids prone to causing deposition of material;

10 a power supply adapted to supply said monitor with electrical energy; and

 a deposit removal system in communication with the deposit monitor adapted to at least partially remove the deposition from the monitoring surface, the deposit removal
15 system being in a control loop with said deposit monitor.

17. The apparatus of claim 16 wherein the fluids are primarily fluids produced by a hydrocarbon wellbore.

20 18. The apparatus of claim 16, wherein the monitoring surface is located on or near one of the following devices switches, valves, sleeves, mandrels, risers, subsea pipelines, surface separators and sensors located on surface facilities.

25 19. The apparatus of claim 16 wherein the deposit monitor further comprises an acoustic device adapted to operate in a resonance mode, wherein the deposit monitor measures deposition of the material on the monitoring surface by measuring a change in resonance frequency of the acoustic device.

30 20. The apparatus of claim 19, wherein the acoustic device operates in a longitudinal mode.

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21. The apparatus of claim 19, wherein the acoustic device further comprises a transducer, and a focussing element coupled to the transducer.

5 22. The apparatus of claim 19, wherein the resonance frequency of the acoustic device is in the range of 10 kHz to 150 kHz.

10 23. The apparatus of claim 19, wherein the deposit removal system includes a deposition inhibiting or removing chemical agent.

15 24. The apparatus of claim 19, wherein the deposit removal system includes elements adapted to exert a physical force onto the deposited material.

20 25. The apparatus of claim 19, wherein the deposition removal system is near a sensor having a surface exposed to the fluids and the deposition removal system is adapted to remove deposits from said exposed surface.

25 26. The apparatus of claim 25, wherein the sensor is selected from a group comprising optical sensors, electro-chemical sensors, or acoustic sensors.